

**Commonwealth of Kentucky**  
**Division for Air Quality**

**PERMIT APPLICATION SUMMARY FORM**

Completed by: Massoud Kayvanjah

GENERAL INFORMATION:

Name:	KGen Marshall, LLC.
Address:	6264 Industrial Parkway, Calvert City, KY 42029
Date application received:	January 10, 2005
SIC/Source description:	4911/ Electric Generation
AFS(10-digit) Plant ID:	21-157-00053
Source AI #:	39146
Permit number:	V-05-055

APPLICATION TYPE/PERMIT ACTIVITY:

<input type="checkbox"/> Initial issuance	<input type="checkbox"/> General permit
<input type="checkbox"/> Permit modification	<input type="checkbox"/> Conditional major
__Administrative	<input checked="" type="checkbox"/> Title V
__Minor	<input type="checkbox"/> Synthetic minor
__Significant	<input checked="" type="checkbox"/> Operating
<input checked="" type="checkbox"/> Permit renewal	<input type="checkbox"/> Construction/operating

COMPLIANCE SUMMARY:

<input type="checkbox"/> Source is out of compliance	<input type="checkbox"/> Compliance schedule included
<input type="checkbox"/> Compliance certification signed	

APPLICABLE REQUIREMENTS LIST:

<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> NSPS	<input checked="" type="checkbox"/> SIP
<input type="checkbox"/> PSD	<input type="checkbox"/> NESHAPS	<input type="checkbox"/> Other
<input type="checkbox"/> Netted out of PSD/NSR	<input type="checkbox"/> Not major modification per 401 KAR 51:017, 1(2)(b) or 51:052,1(14)(b)	

MISCELLANEOUS:

☒ Acid rain source

☐ Source subject to 112(r)

☐ Source applied for federally enforceable emissions cap

☐ Source provided terms for alternative operating scenarios

☐ Source subject to a MACT standard

☐ Source requested case-by-case 112(g) or (j) determination

☐ Application proposes new control technology

☐ Certified by responsible official

☐ Diagrams or drawings included

☐ Confidential business information (CBI) submitted in application

☒ Pollution Prevention Measures

☐ Area is non-attainment (list pollutants):

**EMISSIONS SUMMARY:**

Pollutant	Actual (tpy)	Potential (tpy)
PM <sub>10</sub>	5.7	103.6
SO <sub>2</sub>	15	68.4
NO <sub>x</sub>	33.6	652.5
CO	44	1201
VOC	2.15	37
LEAD	0.14	0.14
H <sub>2</sub> SO <sub>4</sub>	0.84	10.5
Formaldehyde	0.33	24*

\* Potential is based on the emission factor estimated by the manufacturer.

**SOURCE PROCESS DESCRIPTION:**

The KGen Marshall County Generating Station operates eight (8) natural gas-fired turbines rated 1192 mmBtu/hr with an output capacity of 80 megawatts (MW) each. The plant produces electricity during periods of peak electricity demand on a daily and seasonal basis, and is limited to operating 2500 hours per year or less for each unit. The plant does not belong to one of the 28 major source categories listed in 401 KAR 51:017, Prevention of Significant Deterioration (PSD) of air quality because the gas turbines will be used without heat recovery. Simple cycle peaking units have been determined to fall outside of the 28 major source category list. The potential emissions of nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO) from this plant are more than 250 tons per year, and potential emissions of sulfur dioxide (SO<sub>2</sub>), (PM), and particulate-10 (PM-10) are in excess of the significant net emission rates as presented in 401 KAR 51:001, Section 1. The initial permit for the facility has been reviewed under the provisions of the PSD regulation for all these pollutants. The source is located in a county classified as “attainment” or “unclassified” for each of these pollutants pursuant to 401 KAR 51:010, Attainment status designations.

The facility also operates an emergency diesel pump rated 1.8 mmBtu/hr, and four (4) low sulfur fuel oil storage tanks of 519,000 gallons capacity with 9,000,000 gallons per year throughput each. The emergency diesel pump and oil storage tanks are classified as insignificant activities.

**EMISSION AND OPERATING CAPS DESCRIPTION:**

The plant is limited to operating maximum 2500 hours per year for each unit. The plant may fire low sulfur diesel fuel as a secondary fuel for up to 500 hours per year for each unit. The plant shall not fire diesel fuel for more than 16 hours in any consecutive 24-hour period. All combustion turbines must be operated at 60% load or greater except during periods of startup, shutdown, and malfunction.

The sulfur content of fuel fired in the combustion turbines must contain less than 0.05% sulfur by weight.

The permit contains NO<sub>x</sub> BACT emission limits of 12 ppmvd at 15% oxygen on an hourly average, and 9 ppmvd at 15% oxygen on a rolling 12-month annual average while burning natural gas. The NO<sub>x</sub> emissions shall be limited to 42 ppmvd at 15% oxygen on an hourly average while burning low sulfur diesel fuel. Additionally, CO emissions shall be limited to 25 ppmvd at 15% oxygen and 20 ppmvd at 15% oxygen on an hourly average while firing natural gas and low sulfur diesel fuel respectively. Particulate emissions from each turbine shall be limited to 10 lbs/hr while firing natural gas and 26 lbs/hr while firing low sulfur diesel fuel.

OPERATIONAL FLEXIBILITY:

None